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ABSTRACT

This report presents issues discussed at a workshop on dental education that was organized by the World Health Organization (WHO) Regional Office for Europe in collaboration with the Government of the USSR. Workshop issues included oral health care and health care planning, the role of dentists in the future, and future educational objectives for dentists. Additionally, the educational strategies that will be needed for future dentists are mentioned, as well as basic information required to meet those strategies. Next, the educational strategies and curricular requirements needed to support the Oral Health for All 2000 objectives are discussed. Curricular guidelines are examined, focusing on their philosophy and their educational objectives for health sciences and dental education. Finally, the report concludes with observations concerning the need and provisions for European oral health care in the future, and the educational planning for dentists that will be required. Recommendations are presented. Supplementary material includes a workshop participant list, background material, and a list of group discussion topics. Contains 10 references. (GLR)

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FUTURE CHANGES IN DENTAL EDUCATION

Report on a WHO Workshop

Moscow
6-10 June 1988

1990

EUR/HFA targets 4 and 36

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TARGET 4

Reducing disease and disability

By the year 2000, the average number of years that people live free from major disease and disability should be increased by at least 10%.

TARGET 36

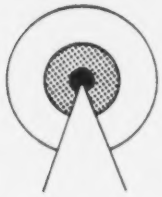
Planning, education and use of health personnel for health for all

Before 1990, in all Member States, the planning, training and use of health personnel should be in accordance with health for all policies, with emphasis on the primary health care approach.

Index:

ORAL HEALTH
EDUCATION, DENTAL - organization/admin
SCHOOLS, DENTAL

EMBLEM FOR ORAL HEALTH



The emblem is based on the concept of a tooth with:

- the two "legs" representing the roots of the tooth,
- the outer concentric white ring representing the enamel,
- the dotted concentric ring representing the dentine, and
- the inner black circle representing the dental pulp (blood and nerve tissue).

. It also represents possible intervention to prevent or care for oral disease:

1) initial caries can remineralize (heal) through preventive measures (primary prevention: outer white ring),

2) caries destruction which has reached the dentine can be treated only by replacement of destroyed tissue with a filling (secondary intervention: dotted concentric ring),

3) caries destruction which has reached the pulp results in the "death" of the tooth (tertiary care: black circle),

The area of each of the white, dotted and black areas represents the goal for future distribution between primary, secondary and tertiary care (prevention) in oral health.

The angle between the roots ("legs") is 40° (= 360° ÷ 9). The proportion of national health budgets spent on oral health can be up to 11% (100% ÷ 9).

The angle between the roots ("legs") also represents oral health as an entry to healthy lifestyles (or self care in oral health), or as a mouth through which healthy lifestyles can be controlled (drugs, alcohol, sanitation, nutrition, smoking, polluted air and water, etc.).

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PREFACE

The most striking feature in the field of oral health in Europe is the dramatic reduction in the severity of dental caries and periodontal diseases (particularly gingivitis) which has taken place in those countries which have been most active in the implementation of comprehensive community based oral disease preventive programmes or where the public at large has had easy access to such preventive remedies. As a result of this, some of these countries are now facing an increasing unemployment of oral health manpower in contrast to other countries (particularly in Southern Europe) where there is an increasing oral health problem and an acute shortage of appropriate manpower. In addition to the decline in the severity of dental caries which has taken place in many countries, changes in demographic and socio-economic patterns have led to the fact that other needs and demands are emerging such as prevention and early treatment of all types of periodontal diseases, oral health care of the elderly (root caries), identification of oral manifestations of AIDS, traumatic injuries of teeth and jaws (sports, accidents, violence), demand for more complicated treatments (implantology, cosmetic dentistry), temporo-mandibular joint dysfunctions (stress), oral mucosal diseases (AIDS), pre-cancers and cancers, herpes, etc.). These problems and demands are foreseen to be of such a magnitude that specific attention has to be directed towards the need for a change in the dental educational system.

As a follow-up to the intercountry workshop on "Organizational Changes in Dental Education" which took place in Dublin, 19-21 September 1984, the Ministry of Health of the USSR generously offered to host a workshop on "Future changes in dental education" which took place in Moscow (WHO Collaborating Centre for the Development of Oral Health Manpower), 6-10 June 1988.

The Regional Office for Europe of the World Health Organization is particularly grateful to Professor E.I. Sokolov and Professor T.G. Robustova, Medical Stomatological Institute, Moscow, for the generous contribution from their Institute without which it would have been impossible to hold this meeting. Special thanks are due to Professor Sokolov, Professor Robustova and their staff for all the hospitality and friendship extended to the participants during their stay in Moscow. Thanks are also extended to all the participants who through their stimulating discussions and constructive proposals made it possible for the rapporteurs, Professor H. Allred, Professor M. Hobdell and Professor C. Smith to prepare this report.

August 1989.

Ingolf J. Moller
Regional Officer for Oral Health
World Health Organization
Regional Office for Europe
Copenhagen.

1. INTRODUCTION

The workshop was organized by the WHO Regional Office for Europe in collaboration with the Government of The Union of Soviet Socialist Republics (USSR) and the Medical Stomatological Institute, Moscow. It was a sequel to that held in 1984 on "Organizational Changes in Dental Education" in Dublin, Ireland (Ref. 1). A list of participants is given. (Annex 1)

Addresses of welcome were delivered by Professor E.I. Sokolov, Moscow and Dr. I.J. Moller, Regional Officer for Oral Health, WHO Regional Office for Europe, Copenhagen.

Professor Sokolov outlined the system for the education of dentists and stomatologists in the USSR. He indicated a movement towards phasing out the training of dentists with a concentration on training stomatologists. To this end, the five year course leading to qualification as a stomatologist is under review. The same curriculum is followed in all schools in the USSR which are part of Medical Institutes. On graduation, every stomatologist follows a compulsory internship for one year. A major problem is a general shortage of all types of dental auxiliaries though the situation is improving. There is an overall shortage of stomatologists in the USSR and some new schools are planned.

On behalf of the Regional Director, WHO Regional Office for Europe, Dr. Moller welcomed the participants to the Workshop. He confirmed that the indications were that changes in the patterns of oral diseases had continued since the 1984 Dublin Workshop. However, although the region had seen some developments in dental education since then, he believed that further change was urgently needed if the dental profession was to play its full part in the "Health for All" programme. Dr. Moller proposed that the present workshop should examine the present and future situations under four main headings:

- educational strategies for health personnel in support of "Health for All";
- changing curricula for oral health personnel in support of "Health for All";
- guidelines for curricula for oral health personnel in the future;
- the role of WHO Collaborating Centres for Dental Education and the network of dental schools involved in curriculum change in support for "Health for All".

This general plan was accepted and Professor H. Allred, Professor M.H. Hobdell, Professor C.J. Smith and Dr. I.J. Moller were appointed co-rapporteurs.

2. WORKING METHODS

WHO had distributed a number of documents to participants before the meeting (Annex 2), and provided lists of WHO Publications on Oral Health (Annex 3) as well as WHO Reports and Documents on Oral Health (Annex 4). The workshop commenced with plenary sessions during which formal presentations were given (Annex 5). Three working groups were then formed, each being given specific topics to discuss (Annex 6). These reported to plenary sessions held at the end of each period. The membership of these groups is recorded in Annex 7.

3. BACKGROUND

Discussions at university, national and international levels, can sometimes create the impression that dental education and dental research are being furthered for themselves alone or even to indulge those who teach and those who research. But this is not so, these activities exist in order to ensure that actions are being taken to improve oral health and that the best possible health care will be provided under prevailing circumstances and that it will improve in the future. Health care provision must, therefore, be the starting point of any consideration of dental education.

Health Care

At the 30th World Health Assembly in 1977, all countries present adopted a resolution which was in effect the definition of a goal for health on a global scale. It has become known in simple and stark terms as: 'Health for All by the Year 2000'. The desirability of stating and even more of achieving such a goal seems undeniable. The means by which it might be accomplished may well be debatable but surely it is essential to consider such a goal to be eventually achievable however difficult the path may be.

The Working Party was reminded of the 'Health for All' (HFA) strategy in the European Region of WHO including the 38 "Targets for Health for All" (Ref.2). This was approved at the 34th session of the WHO European Regional Committee in 1984. It thus became the major policy document for guiding endeavours in health development, for it is intended that countries subscribing to these targets should use them as a basis for their own health policies. Target No. 36 states:

> **"Before 1990, in all Member States, the planning, training and use of health personnel should be in accordance with health for all policies, with emphasis on the primary health care approach.**
> This can be achieved if all countries analyse their needs for the different categories of health manpower required to implement their policies of health for all, adopt suitable health manpower policies, and decide on the numbers and educational qualifications required for each category of personnel."

Some strategies also have been defined (Ref.3) for achieving this target for Europe. For example, Primary Health Care is to be furthered by the:

- promotion of lifestyles conducive to health;
- reduction of preventable conditions;
- orientation of the health care system to cover the whole population.

Furthermore, these strategies will include:

- educating the public on health problems;
- emphasizing the promotion of health;
- having serious concern with the prevention of illness;
- promoting proper nutrition;
- paying attention to family health;
- providing appropriate treatment for common illnesses.

This was seen by the Working Party to be a major statement which must affect the future direction of dental education.

Oral Health Care

Consideration was given to the extent that the education of oral health personnel should reflect consumer demands for oral health care as opposed to normatively determined oral health needs. It is a complex problem particularly where human and financial resources are scarce. It is clearly recognised both in the code of ethics of the International Dental Federation and the Declaration of Geneva of The World Medical Association (Ref.4), that the needs of individuals come before those of the profession. However, any health service, and its requisite educational programmes, which is built on individual consumer demands is likely to favour the strong, articulate and politically powerful in society. There will be a tendency to neglect the weak, the poorly educated and members of minority groups whose health needs are generally greater. An oral health care system that ignores consumer demands can hardly fulfil the important criterion of the Primary Health Care Approach concerned with community participation in the planning, organization and implementation of health services.

Whilst leaving the development of health services entirely to 'market forces' has the advantage that consumer demands can clearly be seen to be addressed, it has the distinct disadvantage that the other fundamental criterion of the Primary Health Care Approach, that of equitable distribution of health care, is unlikely to be achieved.

It was recognised that every effort needs to be made to achieve the most effective and efficient use of the resources available to meet individual, family and community health needs and demands. Where choices have to be made, priority should be given to those who cannot look after themselves because of poverty, infirmity or physical or mental incapacity.

Whilst the range of activities dentists are concerned with is wide, an important factor to examine is the difficulty of each one. It was believed by many that, at present, there is a relatively low need for activities in which difficulties rarely occur and when they do it is easy to analyse the cause. Similarly, there is also a relatively low need for activities in which difficulties frequently occur and their cause is hard to analyse. On the other hand, there is a massive need for activities in the middle categories. But it was agreed that this pattern is changing quite rapidly.

Dr. David Barmes, Chief of Oral Health Unit, WHO Headquarters, Geneva, for example, forecast at the previous meeting in Dublin, (Ref. 1) that, in the near future, the present large need for middle level technology in oral health care will be greatly reduced whilst the need for both low and high level technology will increase to a certain extent. If this proves to be the case, then the role for which dentists have been educated and trained until now would, in fact, largely disappear. Dentists who now work mostly at the moderate level of technology will need to work more frequently at one or other extreme. Thus, some will begin to attempt work for which their training is deficient whilst others to an increasing extent will perform tasks for which their training and experience are inappropriate and excessive.

Consideration was, therefore, given to the hypothesis that the predicted changes would more logically point to the major responsibility for primary oral health care being assigned to other types of health workers. Dentists would then devote their time to the overall management of the oral health care system; to tertiary oral health services; and to the advancement of oral and dental science through research. If this were to be so, which other health workers would then undertake the provision of primary oral health care service?

Perhaps general physicians, who to a certain extent do so at present, but then only if they had trained to do so. Presumably also dental auxiliaries, notably hygienists who, in most European countries at least, do not have such a role in primary care at present.

To cope with such a changed situation, the General Educational Objectives corresponding to the professional functions of dentists would need to include the following. By the end of the educational programme, dentists should be able to:

- participate in the education of the population to recognise that the monitoring and maintenance of oral health was not the exclusive domain of dentists but mainly that of others working in primary health care;
- participate in the education of those working in primary health care to take on the responsibilities for monitoring oral as well as other aspects of health;
- participate in the education of increased numbers of dental auxiliary personnel to broaden their roles to include the preliminary diagnosis of all oral problems providing, as appropriate, preventive care and referral.

The possible consequences of such a changed pattern of oral health care for the dental profession might include:

- dental undergraduate education programmes emphasizing the broad basic medical, dental and behavioural sciences as well as the clinical sciences which are so desirable for further training in the health care sciences and in research;
- dentists having a greater freedom to provide those aspects of oral health care which only their knowledge and expertise make possible, since they would be free of much primary oral health care provision which others would undertake;
- enhanced opportunities for both undergraduate and graduate dentists to re-direct their careers whilst maintaining credit for past achievements;
- more opportunities for students to experience better preparation for further learning and for research, for being well prepared to diagnose and manage disease as well as to promote health and prevent disease at community level.

However, it was felt that dentistry and the delivery of oral health care in general are unlikely to evolve along such a dramatically new pathway as this hypothesis outlines. Increasing numbers of dentists may well tend to specialise through postgraduate studies but it was believed that the present role of dentists, as important members of teams responsible for

the provision of primary health care will continue and be developed in the future.

It was recognised that the usual dental team of a dentist supported by one, or occasionally more, dental chairside assistants can be most efficient in providing both basic restorative care and tertiary oral health care. It is far less so in monitoring health, in diagnosis, and in preventive activities. Increased numbers of other types of clinical and community based dental auxiliaries would support any new role presently envisaged for dentists to greater effect. It was felt that this should enhance and secure the role of dentists in the future but for fewer of them than exist at present.

Regardless as to whether the present role of dentists as important members of the teams responsible for the provision of primary health care is to be developed in the future or if it were to change to one mainly concerned with tertiary health care, many questions need to be directed towards both medical and dental undergraduate education. Clearly, there will be a continuing need for further educational research and discussion.

Health Care Planning

The planning of dental education needs to be placed within the context of the logical stages of health care planning. In the WHO publication "The Planning and Development of Educational Programmes for Personnel in Oral Health", (Ref.5) an 'Educational Spiral' is described with nine stages:

Stage One: define **Goals** for oral health;

Stage Two: define **Strategies** for achieving these goals;

Stage Three: define **Activities** for various types of oral health workers;

Stage Four: define **Educational Objectives** appropriate for each type of worker;

Stage Five: design various **Educational Programmes** aimed at achieving these objectives;

Stage Six: **Implement** the programmes;

Stage Seven: **Evaluate** the educational programmes to determine whether or not the educational objectives had been achieved. If it were judged that they had not been, then a return to stage four would be indicated to determine whether or not the educational objectives; the programme design; its implementation or indeed its evaluation were at fault. However, if the educational objectives had been achieved, it would then be logical to proceed to:

Stage Eight: **Implement** the strategies for oral health, finally leading to:

Stage Nine: **Evaluate** these strategies to assess whether or not they had enabled the goals for oral health as first defined to be achieved.

The participants considered the first five of these stages to be of particular concern in the examination of the present need for change in dental education.

It was believed that a major problem of health manpower development in many countries is that planning does not always properly reflect health care needs. There tend to be wide divergences between educational objectives on the one hand and service requirements, consumer expectations and general socio-economical situations on the other. The over-production of dentists in a number of European countries over recent years resulting in some unemployment and under-employment provides a clear example of this.

A commitment to HFA implies new approaches to the planning, training and utilization of health professionals, which ought to be integrated, or at least co-ordinated, with the planning of health services. However, in the European region, it is apparent that various kinds of imbalances exist between the supply, need, demand and requirements for health personnel. Quantitative imbalances in the ratios of health personnel to population served and in the relative proportions of various professional groups, have been described in a recent CIOMS/WHO publication (Ref. 6); also a WHO Collaborating Centre has been created specifically to study health personnel trends (Ref. 7).

Within the educational system catering for health professionals, there is also evidence of imbalance. The central issue at present is not so much concerned with the introduction of new material into the curriculum, or the improvement of teaching and learning methods, but rather the call to provide evidence of the social relevance of what is taught. This stresses that the real purpose is to educate for competence and for change, which necessitates emphasis being placed on the phase of continuing education. Often this does not appear to be happening.

Whilst considering the education of future dentists, it would be wise for such matters to be borne in mind for a WHO study was carried out in 1977 on the 'Training and Use of Dental Auxiliary Personnel in Europe' (Ref. 8). It was felt unlikely that significant changes had occurred since then in spite of the theoretical 1990 deadline just referred to in 'Targets for HFA'. A measure of the implementation of any strategy was seen to be the number of oral health workers employed. This study confirmed that oral health care throughout Europe is provided almost exclusively by dentists with the support of dental chairside assistants and dental technicians. Other types of personnel are very few in number. Nevertheless, the variety of systems that operated was surprising. Of 20 countries, one had six types of auxiliaries; six only two types: dental technicians and dental chairside assistants; whilst the other three had four or five and these differences were magnified many times on examining the job descriptions.

Similarly, there was great variation in the design of the educational programmes for the various types of workers, at least in terms of the length of training. For example, for dental technicians from 1,000 hours to more than 8,000; for dental chairside assistants from a few hundred hours to more than 5,000; for dental hygienists there was a two-fold difference though for dental therapists it was more comparable.

The division of labour in the provision of oral health care provision might also be analysed in other ways, including the patterns of care provided for patients in different practices or how dentist-led teams spend their time (Ref. 7). Again, as one would expect, there were great variations.

The WHO European Office has attempted to sensitise health and education authorities to the need to take key elements of the HFA strategy into consideration while planning, training and utilizing health personnel to:

- focus on health and health promotion;
- improve international co-operation;
- ensure comprehensive and continuous care;
- evaluate the use of technology and the quality of care; and
- emphasize overall the necessity for teamwork.

A framework has therefore been developed, to identify the educational changes required to ensure that the various categories of health personnel become an active and efficient force in promoting HFA. The WHO European Office has begun to create movements for change among nurses, public health managers and physicians, including discussions of model curricula. There is in particular a close collaboration between WHO, the Association of Medical Deans in Europe (AMDE) and of the Association for Medical Education in Europe (AMEE) in the development of such a framework for physicians.

It would seem that governments have so far failed adequately to convey to universities what their countries at the World Health Organization Assembly have committed them to implement through their faculties of medicine and dentistry.

A fundamental part of the internationally accepted policy of the World Health Organization is 'Equity in Health Care'. The participants felt that this implies that existing systems for health care delivery will have to be modified to a considerable extent. Dentists, as well as physicians,

will need to work much more closely than has been customary with other health professionals and it follows that, in part, at least some education and training ought to be in common. Major changes will be required of dental and medical schools with considerable organisational and educational implications. Frameworks need to be devised for the future education and training of oral health personnel in an integrated manner, consideration being given to their types, numbers, and likely utilization. It is certain that the Goals for Oral Health must embrace both the enhanced prevention or oral diseases, frequently requiring low level technology, and the most appropriate and up-to-date treatment of established disease, which demands a very high level.

The implementation of any strategy to achieve such goals will involve dental professionals of whatever type undertaking programmes of education which extend throughout life. Graduate dentists in particular will need to be provided with a sound scientific and general medical educational background to enable them to respond to changing demands with great confidence. To enable the profession as a whole to function to maximum effect, it will also be essential to provide adequate numbers of appropriately trained auxiliary personnel and employ them in the most effective mode at local level to meet the need and demand for care.

4. THE PURPOSE OF DENTAL EDUCATION

Education and training are not interchangeable terms. It was considered to be inappropriate to ask what do dentists need to know with respect to their education, because such a question is actually relevant only to their training. Education involves an appreciation of knowledge for its own sake and can be acquired by unconscious assimilation and interaction with others. However, it is the source of innovation, new ideas, development and change. Without it, those trained for a particular role are unlikely to initiate new approaches to solving problems and are

susceptible to having change imposed upon them by others.

The Role of Dentists in the Future

It was felt that dentists in the future could be defined as:

> **clinicians whose education and training is recognised as fitting them to accept a responsibility in the planning and the provision of whole care for individual patients and communities; they should have special knowledge and skills in respect of the prevention, diagnosis and management of diseases and abnormalities of the oral cavity and its surrounding structures at the individual and community levels. They will also require a knowledge of the associated sciences sufficient to permit them to advance knowledge in these fields and to undertake further training.**

The **overall aims** of dental education which were seen to follow from this were to:

- **maintain and further develop knowledge and expertise to enable the demands and the needs of the community for oral health to be achieved, as part of total health;**
- **provide an appropriate and effective educational environment for all members of the oral health care team to permit them to learn their various roles in the wider health care team;**
- **provide the basis for the continuing further education of all members of the oral health care team throughout their professional lives in all defined specialties.**

A question seen as central to the future development of dental undergraduate programmes concerns their purpose. Should these be to prepare clinicians who, on graduation, are:

- well prepared for postgraduate education; or
- already qualified to practice dentistry independently?

Dentistry in Europe, unlike medicine, has generally opted for the latter course though in some countries, such as the USSR, there is a compulsory period of further training after graduation, but what is meant by independent practice?

It was recognised that the assumption has usually been made that dental graduates may follow a variety of career paths in a number of social and organizational settings. Logically, therefore, dental schools need to define the professional competencies which would allow their graduates to

participate in the delivery of primary health care in these different settings and, at the same time, prepare them to continue their own education. To date, few have clearly articulated such professional functions. However, if the predicted changes in the pattern of oral health care come about, would any of the current competencies be relevant to the future dentists' new roles?

The background to educational change is complex. There are many variables as well as frequent interactions between the dental and other professions. For the most effective planning to occur, there needs to be a clear vision of the future role and responsibilities of the profession and new thoughts on the educational implications that change would require.

Within the context of the whole continuum of dental education, it was considered necessary to step back from the day-to-day teaching commitments and past common practices and consider at this time such wide ranging questions as:

- what should be the future role of the traditional biomedical disciplines in dental education and what is their place in meeting defined oral health service needs?;
- to what extent should dentists learn to become comfortable with a health care system in which other workers operate, maybe independently, or as members of teams whose leadership may not necessarily be the dentist?;
- to what extent should time and effort be spent by dentists on health promotion and disease prevention as well as on the management of disease?;
- what should be the level of preparation of dentists for further learning and for research;
- to what extent should dentists learn the diagnosis and management of oral diseases.

For oral health personnel to be used effectively and efficiently, it was felt that, in the future, curricula should enable them to respond and adapt to any rapid changes in the disease panorama and socio-economic conditions in society; to change career after primary qualification whilst retaining credit for past achievements, and to expose other health

personnel to oral health care as part of the holistic approach to health.

In the education of oral health personnel in general, it was seen to be essential to ensure that they could:

- gather information with sensitivity and insight;
- make judgments and take action on the basis of probabilities even in the absence of complete data;
- make compromises that acknowledge reality without violation of principle;
- promote health and the prevention of disease at both community and personal levels;
- diagnose and manage disease as appropriate to their future role;
- interact and collaborate with other health workers;
- be part of a health care system in which individual entrepreneurship may no longer be appropriate;
- continue learning after schooling is completed and undertake research as appropriate.

With respect to future dentists in particular, they were seen to be the leaders of oral health care teams with responsibilities for:

- In Primary Health Care
  - . collecting and interpreting epidemiological data;
  - . developing, planning and co-ordinating programmes for prevention and health promotion;
  - . monitoring the effectiveness of preventive programmes;
  - . delegating preventive procedures for individuals;
  - . supervising delegated tasks;
  - . devising appropriate educational programmes for all members of oral health care teams;
- In Secondary Health Care
  - . diagnosing and planning comprehensive oral health care for individuals;
  - . delegating tasks as appropriate to available auxiliary personnel as local circumstances allow;
  - . supervising delegated tasks;
  - . providing oral health care which cannot be delegated;
  - . providing leadership and management within the oral health care team;
  - . providing or participating in the continuing education of their oral health care teams;

- In Tertiary Health Care

  . diagnosing and planning complex aspects of oral health care;

  . providing difficult or advanced forms of treatment based on their own special knowledge and skills;

  . initiating and participating in continuing education programmes for dentists including other specialists in health care.

Educational Objectives for Dentists in the Future

It was appreciated that a full range of educational objectives can be formulated only when certain basic information is to hand, namely the:

- health targets for the population, their health care needs and expectations;
- trends in oral disease patterns;
- educational backgrounds of the students;
- availability of appropriately qualified and dedicated staff;
- required oral health manpower types and the compositions of teams;
- financial constraints;
- time restrictions; and
- legal requirements.

Educational objectives can be defined in many ways. Their structure will be largely influenced by the educational strategy adopted, such topics will be considered in greater detail in Section 6.

5. EDUCATIONAL STRATEGIES FOR ORAL HEALTH PERSONNEL IN SUPPORT OF 'HEALTH FOR ALL'

In the educational spiral referred to (Ref. 5) stages five and six concern the design and implementation of educational programmes. In other words, what are now and what will be in the future appropriate educational strategies for oral health personnel?

Two main threads of discussion and development were discerned in the educational strategies now being pursued in order to change the orientation of oral health personnel. One was based on the concept of a health sciences core curriculum whereby oral health personnel would undergo much of their early education in common with other health

professionals. The second perceived oral health personnel being educated and trained to different levels of competence according to their abilities and the public need. In many ways, these two approaches were seen to be in conflict though they are both based on the potential advantages of an integrated approach to educational experiences recognised as including:

- improved teamwork between different categories of health personnel;
- close contact and interaction between those involved in both teaching and research;
- interaction between all categories of students and their teachers (pre-qualification students and those established health personnel undertaking continuing education, re-education or research).

However, the first strategy emphasizes the wider health care team and the potential advantages of common educational experiences for physicians, dentists, pharmacists, nurses, physiotherapists, some scientists and dental auxiliaries. The second strategy concentrates on the advantages of common learning experiences for the various members of oral health care teams.

Theoretical approaches to this second strategy were reported as being followed at both Malmo (Sweden) and Arhus (Denmark). Planning is well advanced for the introduction of courses which will allow close integration of curricula for dentists, dental hygienists, dental chairside assistants and dental technicians. A vertical structure of modules is planned, all within the oral health field and involving increasingly complex problem solving. The modular structure will permit the transfer of credit for students who might later undertake a different course. The primary aim of these courses will be to achieve integration and flexibility amongst different categories of oral health personnel.

It was also known that The London Hospital Medical College (UK) has been offering courses since 1973 for student dentists, dental chairside assistants, dental hygienists and dental therapists in which they undertake common learning experiences and significant parts of the

curricula form a common core. In the early years of these integrated courses, it was found necessary to supplement the common core curriculum with significant amounts of peer group learning experiences for the dental auxiliaries.

It was recognised that by their very nature, integrated courses of any kind require the most careful and detailed consideration of timetabling, i.e. the organisation of subjects within the various curricula. Traditional departmental boundaries need to be eliminated to permit the presentation of topics as units which incorporate all the relevant specialisms. This facilitates an understanding of the topics and the relationships between the various aspects of their study, which makes them valuable to more than one student group. In Dublin (Ireland) a commitment in principle to the first strategy has been met with considerable resistance from certain basic medical science departments in the Faculty of Health Sciences and this is hampering progress.

6. CHANGING CURRICULA FOR ORAL HEALTH PERSONNEL IN SUPPORT OF 'HEALTH FOR ALL'.

It was recognised that in common with most educational institutions those concerned with oral health personnel tend to be inherently resistant to change. This is due to their structure of governance and their departmental organisation as well as the control exercised both nationally and locally on the educational programmes they offer. Of not least importance can also be staff attitudes to change. However, susceptibility to change can be created by either economic stringency or social upheaval though it is rarely initiated from within the institution itself. Change tends to be imposed from outside through such factors as overall government policies or changes in social perceptions.

In Dublin (Ireland) the institutional barriers to change have been largely overcome by employing two main strategies:

- The decision making process was democratized by involving a much wider spectrum of the academic staff than had been customary in decision making in relation to the curriculum. The traditional influence of the larger departments was thereby reduced.
- Financial control was transferred from administrators to the teachers who were thus able to determine the priorities in spending.

As a result, significant curriculum developments have already been achieved and it is believed that the system which now gives rise to more informed decision making than was possible in the past will facilitate future change.

7. GUIDELINES ON CURRICULA FOR ORAL HEALTH PERSONNEL IN THE FUTURE

Philosophy

A **qualification** is a condition that must be fulfilled before a right can be acquired or an office held. Society, therefore, demands assurances that each individual is qualified to carry out the activities prescribed for their respective offices. A **curriculum** is normally defined as a course of study that leads to the acquisition of a qualification. It is submitted that fundamentally it demands only two clear definitions:

- **the educational objectives to be attained;**
- **how the attainment of these objectives is to be determined.**

However, it is not uncommon for curricula to be defined in quite different terms including:

- the presumed existing knowledge and skills of those commencing the course;
- the minimum period deemed necessary to achieve the educational objectives;
- the 'Teaching' that must be provided.

It was considered that such information can only be helpful rather than essential. Whilst it is of importance to determine what has been learned, it is of little significance to state what has been taught. To create the milieu in which learning might occur to greatest effect was believed to be more important than defining the number of lectures to be delivered. At

present most institutions, in general, use subject based curricula. Such a strategy is designed primarily to assure systematic coverage of well established disciplines through sequential presentation by individual departments. The content and method are determined by these special interest groups, usually acting alone, since they are presumed to be best qualified to determine what needs to be taught. Such autonomy inevitably means that these decisions are often made by those who have only limited acquaintance with the range of problems that must be dealt with by qualified health personnel. Courses of this type have long and honoured histories and countless well qualified oral health personnel have followed such paths, nevertheless, it was considered necessary to ask if this is the most effective pattern of dental education for the future. For such a strategy inevitably leads to curricula overcrowded with material irrelevant to the defined competences. It was felt, therefore, that a strategy based on the mastery of defined competencies to stated levels of proficiency, oriented towards meeting community needs might be a more appropriate strategy.

The belief is restated that a curriculum should be designed in order to help students to learn but so often the concern is with what is taught. It is irrelevant, for there is no direct correlation between a teacher's concept of what has been taught and a student's understanding and learning. Throughout the world, the most prominent teaching method in dental and medical schools is the lecture to few or to many students, a technique regarded as essential if coverage of an ever expanding body of knowledge is to be accomplished. If covering the content of established fields of knowledge or simply telling students how to solve problems they may encounter represents the highest priority then such a method may be justifable. If the acquisition and refinement of skill in using knowledge and of developing and shaping a wider range of professional functions are high priorities, then students must be given both ample opportunity and

encouragement to engage in these activities at the expense of content coverage. It was felt opportune now to ask what is likely to be the most effective future pattern for the education of oral health personnel.

It is not common to advocate the need for students to learn dentistry in the context of whole patient care and the earliest possible introduction to patients. Such educators strongly advocate a problem based educational strategy and, in the field of oral health, patients and groups of potential patients in communities, embody the problems that students need to solve in order to learn. These are practical problems whose solutions need both theoretical knowledge and its manipulation. It follows, therefore, that students need early and continuous exposure to patients if adequate learning opportunities are to be afforded them. It is in the solving of the problems embodied in patients that the interdependence and common ground is most obvious in the education and work of health personnel.

The evident disadvantages of disciplines defining curriculum components without taking adequate cognisance of each other are well known and many proposals have been made to avoid such things. However, these components are legion for logically they embrace each separate specialism for every type of health personnel. The possible permutations are far too great to contemplate and many are mutually exclusive. Thus, a course in which the basic medical/dental sciences are totally integrated with the clinical dental sciences would almost certainly prevent the development of common learning experiences and interaction between dental and medical undergraduates. Alternatively, a sequence of courses each designed to be of maximum value for groups of students following different curricula makes any integration of teaching in the basic and the clinical specialisms through topic based courses difficult.

It was submitted that within every specialisms the core science of the

subject can be identified. This needs to be understood before its application can be properly entered into. Only when a science is applied can possible conflicts of interests between dental and medical education arise. A reasonable simile is that identical types of bricks, concrete, wood, and glass are used to build many different structures. It would be both unnecessary and undesirable to insist on quite separate sources of such materials for each building.

The Health Sciences are the disciplines contributing to knowledge of relevance to health and disease. They are the essential elements in the education and training of many different groups of workers which society recognises as being qualified to contribute to the provision of health care, including physicians, dentists, nurses, physiotherapists, dental auxiliaries, etc. The requirements of knowledge in the various Health Sciences, appropriate to recognition as a particular type of health worker, naturally vary but common core curricula should be defined for the education of say physicians, dentists, nurses and pharmacists; or alternatively of dentists and dental hygienists; or perhaps of many different groupings of such workers. Clearly, a common core of experience is likely to be broadly based and more extensive between physicians and dentists than between dentists and dental hygienists and the more groups involved in a particular course the narrower the common element is likely to be.

Educational Objectives

Common Core Curricula for the Health Sciences

The 37th World Health Assembly (1984) urges Member States to encourage universities and other higher learning institutions to include the social and technical concepts of Health for All in the education and training of all categories of students and in orientating the education and training

of workers in health and related fields towards the attainment of health for all.

Aims: Regardless of the type of health worker being educated, there would seem to be certain overall aims which must be common to all curricula, for collectively all should **promote health** based on an appreciation of:

- **the environment;**
- **people's behaviour and lifestyle;**
- **the principles of biology and pathology;**
- **equity in the delivery of health care.**

It is in such fields of endeavour that common interests exist between the various health care workers and for which common core curricula for the Health Sciences may be evolved.

General Educational Objectives: A possible list of general educational objectives for all those aspiring to qualify in one or other branches of health care, might be stated in the following terms.

On completion of their course in one or other of the Health Sciences students should be able to demonstrate, to a standard appropriate to their future role, a knowledge of the:

- **sciences appropriate to the study of humanity, of human biology, of form and function and natural variation and an understanding of scientific method;**
- **epidemiology of diseases at local, national and international community levels, including an ability to analyse the implications and significance of the data;**
- **pathological basis of diseases including their prevention and prognosis and the use of appropriate investigations for their diagnosis and management at both personal and community levels;**
- **common and important clinical conditions and, as a basis for clinical judgment, the skills of clinical observation, communication and data collection;**
- **ways in which behaviour and lifestyle influence health and disease;**
- **evaluation of health care services in terms of quality, quantity, efficiency and efficacy at all levels and of medico-legal obligations and medical ethics;**
- **responsibilities of the health-care professions to research and the development of new preventive and therapeutic procedures;**
- **advances in technology relating to health care and an appreciation of their possible implications.**

A phrase of great significance in this statement of general educational objectives is "appropriate to their future role". Lists of educational objectives relevant to a topic might be identical for two or more different types of curricula but the criteria of assessment might be at the same or at quite different levels.

The performance expectations for various groups are likely to be reflected by a different emphasis within a common core curriculum. Thus, for one group it would be appropriate to emphasise the development skills in data collection and their analysis in order to permit the proper assessment of the situation and the creation of a plan to resolve the problems identified. For a different group, it might be necessary to provide more guidance by identifying an already prepared plan of action and train them to implement it. The latter will require an emphasis on the development of skill and accuracy in recalling and carrying out tasks that have been learned rather than on the synthesis of ideas demanded of the former.

Variations in the educational needs of different groups of students does not mean that they cannot share educational experiences. The core element appropriate for one type of student may be only a part of the core appropriate for others, whilst it may need to be supplemented with special educational experiences for that peer group. It is essential to appreciate the variations in the intellectual capacity and educational background of students following different educational programmes in the health sciences. However, those following degree courses leading to qualifications in dentistry, medicine, pharmacy and nursing should all be capable of rising to the challenges of a rigorous common core curriculum in the health sciences.

Curricula for Dentists

Reference has been made to the UNICEF/WHO international conference of 1978 and its resolution that the achievement of Health for All lay in the

primary health care approach. This is fundamental to the WHO/EURO strategy but presents a direct challenge to the traditional philosophies of dental education.The WHO Publications No.86 'Educational Handbook for Health Personnel' (Ref.10) and No.93 'The Planning and Development of Educational Programmes for Personnel in Oral Health' (Ref.5) are helpful documents for those planning any new curriculum.

Aims: The overall aims of educating and training dentists might be defined as follows:

- **to establish or to maintain and to develop a body of knowledge and expertise able to meet the demands and the needs of the community for care aimed at achieving oral health, as an essential component of whole care;**
- **to provide an educational enviroment in which dental students might learn their various roles as members of oral health care teams and, therefore, of wider health care teams;**
- **to provide the basis for the continuing further education of dentists throughout their professional lives in all defined specialisms whether these be in General Practice, Community Practice, Hospital Practice, or Academia.**

General Educational Objectives for dentists might be expressed in the following terms which are a composite of those given in WHO Publication No. 93. On completion of their undergraduate course leading to qualification as dentists, students should be able to:

- **identify all aspects of oral health problems and to collect, process and present data that is relevant to these problems; and to resolve and manage these problems, the individuals, families and communities;**
- **investigate community oral health problems and to recommend efficient and effective ways of dealing with environmental, occupational, behavioural and public policy issues;**
- **develop the clinical skills and methods required to define and manage oral health problems for patients, including their physical, emotional and social aspects within the context of effective primary health care of whole individuals;**
- **recognise, maintain and develop the personal characteristics and attitudes required for careers in a health profession, including**
  - **an awareness of personal assets, limitations and emotional reactions;**
  - **a sense of responsibility and dependability;**
  - **an ability to relate to and show concern for other individuals;**

  - . being self-directed learners, recognizing personal educational needs, selecting appropriate learning resources and evaluating personal progress;
  - . identifying their own personal limitations and assets and by nurturing their capacity and interest, enhancing their knowledge and developing the personal characteristics required for professional advancement;
- assess critically professional activity related to patient care, health care delivery and health research;
- function as productive members of small groups engaged in learning, research or health care;
- manage oral health centres at various levels and in a variety of settings and work effectively and efficiently in health teams, dedicated to teaching, research or service and make full use of available facilities;
- apply basic principles of oral health education to assist and direct the planning, implementation and evaluation of programmes for the promotion of oral health and the prevention of oral diseases as well as for the care and rehabilitation of patients, according to the needs of communities and the local social, religious, customary and cultural values;
- work in a variety of health settings; and
- function as effective and efficient members of teams with a sense of responsibility and dependability

This list of General Educational Objectives is provided in order to stimulate careful consideration by those concerned with planning of what would be appropriate for their communities. It should not be considered as exclusive. **Intermediate Educational Objectives** will be more detailed and will relate to the various specialisms that have evolved over the years, though they should not be bound by any established departmental structure. Though they did not form a significant part of the WHO Workshop with which this report is concerned, nor could specific educational objectives be discussed in any detail, a belief was expressed that there is a special need to ensure appropriate consideration for coverage of:

> diagnosis and treatment planning; the behavioural sciences; the teaching of oral self-care; the management of elderly and handicapped patients, particularly with regard to tooth wear and damage; the implications of systemic medication; new materials; cosmetic dentistry; osseous-integrated implants; pathological mucosal conditions; AIDS; tempero-mandibular joint problems; facial pain and headache; anomalies of cranio-facial development; and adult orthodontics.

Nor did it prove possible to give proper consideration to the processes of evaluation but this does not diminish its significance as an important component of any educational strategy.

8. CONCLUSIONS

The Need for Oral Health Care in the Future

- The existing evidence suggesting that the major problems of oral diseases in Europe have been overcome is insufficient for such a conclusion to be drawn. Patterns are changing, but the extent and speed of these changes vary in different countries and will need to be continually monitored. The causation, diagnosis, prevention and management of oral diseases have not yet been investigated adequately whilst the planning, implementation and evaluation of oral health services are much in need of sound research effort.
- There will be a continuing need for primary, secondary and tertiary oral health care services. However, the proportions of low, medium and high level technology needs will change, with significant reductions in the preponderence of those in the middle range, and some enhancement of the other two.
- The level of need for oral health care will be determined jointly by both the consumers and the providers. However, in future, increasing consideration will be given to the participation and opinions of the communities served (as identified by politicians, government planners and consumers) who will need to become better informed. There will be an increasing need for oral health care of a high standard to be provided for all sections of society in an equitable and fair manner.

The Provision of Oral Health Care in the Future

- In the foreseeable future, dentists in Europe will continue to play the major role in the provision of primary oral health care whilst

following many career paths in a variety of social and organisational settings.

- Changes in the patterns of oral diseases will enable dentists of the future to develop fully the wide role in health care provision for which their education and training should fit them. However, for these opportunities to be fully exploited, sufficient numbers of appropriately trained auxiliaries will be needed and the overall number of dentists required will be significantly less than at present.
- It is becoming increasingly important to ensure that the most appropriate changes are achieved in the defined roles and numbers of the various oral health workers (dentists, dental hygienists, dental therapists, dental chairside assistants and dental technicians).
- To provide oral health care in the future, dentists will need the broadly based competence in restorative dentistry now required of them whilst developing a wider role than has been customary in the care of the whole patient and of communities. This will undoubtedly involve a revision of systems of remuneration which are, at present, generally based on items of service.
- There is an urgent need to take steps aimed at reducing isolationism in the employment of personnel in oral health. Caring for the health of human beings requires professions to work together. There should be wide interaction wherever possible between oral health personnel and others in medicine, and the professions auxiliary to medicine and dentistry. Such interactions benefit society as a whole as well as the professions themselves.

Dental Education

- A major problem of health manpower development in many European countries is that planning does not always reflect needs. There can be wide divergences between the defined educational goals on

the one hand and oral health service needs, consumer expectations and the general socio-economic situation on the other.

- A proper balance is needed between the educational objectives of each stage of dental education (undergraduate, postgraduate, in-service, specialist, continuing).
- There are great advantages to be gained from students of many disciplines learning through common core courses. Interactions between dental and medical students and the professions auxiliary to them; as well as with students of the social and biological sciences can be of benefit to all. At present, it is usual for members to follow single and separate tracks from which they cannot divert and still retain credit for past achievement. Furthermore, they are unaware of the different roles of the various members of the wider health care team.
- There is an urgent need to evolve a core curriculum in the health sciences. The aim would be to create health care workers (in medicine, dentistry, pharmacy, nursing, etc.) who would promote the health of society from a common base of knowledge. The curriculum would draw upon the basic sciences including the biological, social and medical sciences. It would include consideration of the environment, and people's behaviour and life-style; developing an understanding of the aetiology and pathology of disease; also the organisation and delivery of health care.
- Communication and interaction between dental schools throughout Europe need to be improved to ensure that:
  - . all may benefit from the experiences of others;
  - . collective wisdom brings about more rapid development and change for the better;
  - . duplication of effort in new adventures is reduced to a minimum consistent with the need to verify results under different circumstances.

Furthermore that the WHO Collaborating Centres for Dental Education, the WHO Centres for Health Services Research and the Association for Dental Education in Europe, have special roles to play in this work; whilst the International Dental Federation and the International Association for Dental Research will have much to contribute.

- There is a need to shift the emphasis of expenditure on oral health care from its provision to research. The causation, diagnosis, prevention and management of oral diseases have not yet been adequately investigated whilst the planning, implementation and evaluation of oral health services is much in need of sound research effort. Furthermore changes in the education of oral health personnel are presently brought about in the virtual absence of data.

9. RECOMMENDATIONS

We would wish to make three main recommendations.

1. **That WHO gives further encouragement to strengthening communications between educators in all branches of the oral health field** by:

   - giving every support to its Regional Office for Europe in its central role of establishing new and strengthening existing ties with all appropriate non-governmental organisations. Notably on the oral health side these would be with the Association for Dental Education in Europe, the International Dental Federation, the International Association for Dental Research and the Dental Committee of the European Community;
   - confirming for a further four year period the designation of the Moscow Institute of Stomatology and the Dublin School of Dental Science as WHO Collaborating Centres for Dental Education in Europe. This would enable them to continue to act as reference points and co-ordinating centres;
   - requesting its Regional Office for Europe to formally invite every European institution concerned with the education of oral health personnel to become part of a network, each reporting annually to the others on their developments, as was proposed in the report of the WHO Dublin Workshop of 1984.

2. **That the WHO sponsors a workshop on 'Core Educational Objectives in the Health Sciences'.** This would include educators in Medicine, Dentistry, Pharmacy, Nursing and any profession auxiliary to them. The main aim would be to take the initiative in planning curricula developments which:

   - identify the major educational objectives of one or more curricula in the health sciences which would provide appropriate common core education on which to base the more specialised professional educational experiences;
   - greatly enhance the opportunities for students and qualified personnel to retain maximum credit for their achievements to date should they need to transfer to other training pathways in the health sciences.

3. **That the WHO Regional Office for Europe, whilst encouraging the maximum possible investment in research in all aspects of oral health, should in particular investigate the means by which educational research in the field might be stimulated. In addition to general support, WHO should take a lead and in collaboration with other bodies, notably the Association for Dental Education in Europe, ensure that a European centre for Research into Dental Education is founded.**

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Annex 1

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ANNEX 2

BACKGROUND MATERIAL

The following documents have been provided by WHO:

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ANNEX 3

FIRST PLENARY SESSION

FORMAL PRESENTATIONS

SPEAKERS and TOPICS

Professor H. Allred	-	'The need for change in dental education'
Dr. J.P. Menu	-	'Educational strategies in support of "Health for All"
Professor E.I. Sokolov and Professor P.A. Leous	-	'Dental Education in the USSR'
Professor R. Attstrom	-	'Integrated teaching of dental personnel - the Malmo model'
Dr. D.B. Shanley	-	'The experience of fundamental curriculae change'
Professor T. Pilot	-	'Dental education and manpower production - the Dutch experience'
Professor M.H. Hobdell, Professor P. Boute and Dr. R. Gonzalez-Giralda	-	'The roles of WHO Collaborating Centres for Dental Education; the Association for Dental Education in Europe; and the International Dental Federation'

ANNEX 4

GROUP DISCUSSION TOPICS

Group A

Q.1 - The hypothesis has been made that the crown of the 'Barmes Hat' is blowing away. Will the role of the future dentist be to accept the major responsibility for primary oral health care or will it be concentrated on the provision of secondary or tertiary care?

Q.2 - On what information should curricula be designed?

Q.3 - A need to demonstrate considerable competency in restorative dentistry still dominates undergraduate education. Is this the pattern for the future? If not, how can change be brought about?

Group B

Q.1 - What could be the common core curriculum for the health sciences (the overall as well as the intermediate educational objectives)?

Q.2 - How best can dental education respond to consumer demand?

Q.3 - A graduate in medicine has many options to follow as carer pathways. A dental graduate is more limited. Should this be changed and, if so, how?

Group C

Q.1 - Who decides the role and function of the future dentist (or dental specialist), the provider or the consumer?

Q.2 - What are the key areas for educational research in dentistry and how might these be pursued to maximum benefit?

Q.3 - What should be the role of the WHO Collaborating Centres for Dental Education and those for health service research?

ANNEX 5

MEMBERSHIP OF GROUPS

Group A

Professor E. Hjorting-Hansen - Group Leader
Professor P. Boute
Dr. C. Emilio
Professor W. Kunzel
Dr. O. Brazda

Group B

Mr. D.B. Shanley - Group leader
Dr. B. Birn
Dr. J. Denes
Dr. H. Eriksen
Dr. J.P. Menu
Dr. J.P. Moreno-Gonzalez

Group C

Professor H. Hansen - Group Leader
Professor R. Attstrom
Dr. A. Garfunkel
Dr. G. Gillespie
Dr. S.I. Ivanov
Professor T. Pilot
Dr. J.E. Winther

WHO PUBLICATIONS ON ORAL HEALTH

- Cost and Benefit of Fluoride in the Prevention of Dental Caries. By G.N. Davies. WHO Offset Publication, No. 9, 1974; 91 pages (Ar, E, F). ISBN 92 4 170009 2. Sw.fr. 20.-

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- The Training and Use of Dental Auxiliary Personnel. Report on a Study. By H. Allred. Public Health in Europe, No. 7, 1977; 70 pages (E, F, R). Sw.fr. 9.-

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Reports and documents are obtainable free of charge from the Oral Health Unit, WHO Regional Office for Europe, Scherfigsvej 8, DK-2100 Copenhagen O, Denmark.